

DDI 03484 /84

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MEMORANDUM FOR: Deputy Director for Administration

FROM: Robert M. Gates
Deputy Director for Intelligence

SUBJECT: Report of the DI Planning and Development
Task Force, Requirements for Modernization
(15 May 1984)

1. Attached for your information and comment is the most recent report of the DI Task Force on Planning and Development. The report lays out a series of near- and longer-term requirements for data processing, communications, and ADP training in this Directorate.

2. Pages 2-5 deal with our near-term requirements for universal, desk-side access to data processing tools. As you know, we have already signaled an intention to move aggressively toward this goal in our initial round of new FY86 initiatives. Such a program is fully consistent with the directive in the 1984 Addendum to the Strategic Plan that calls for all who need it to have access to "a computer terminal that will provide access to a secure, compatible, and easy-to-use set of the data and tools required to do his or her job" by the early 1990s, and for the DI to "acquire this capability even sooner"

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—The Task Force report, written by a cross-section of DI analysts and managers, underlines how urgently the rank and file want ADP capabilities now. Although members of the Task Force argue for a March 1985 implementation date, the required financial resources are not available. Nevertheless, I think that the tone of the report, containing a cry from the average analyst that immediate desk-side access to SAFE and VM is absolutely necessary to produce the best-possible intelligence product, is especially noteworthy. Accordingly, I want to determine what aspects of the transitional program can be accomplished on what time schedules.

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—I am particularly interested in a joint effort to provide broader access to SAFE within the next year. Even with the funds that have been requested in the FY86 program (to double SAFE installations to 40 per month), 1988 will arrive before all in the DI who need SAFE access—not to mention other legitimate claimants in the Agency—can have it. We are willing to explore non-hardware solutions, such as permitting access to the system in shifts if that is feasible, to achieve the goal of greater SAFE availability.

3. In addition to the broader, desk-side access to central computing facilities, we have decided to make a substantial investment in personal computers. This will provide at least some ADP tools to DI personnel who are not likely to get a Delta Data over the next year. We will, of course, acquire our PCs as required [redacted] While these personal computers will initially operate in a stand-alone mode, we want to work with you on these procurements to insure that the PCs can be connected to VM and SAFE in a reasonable timeframe.

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4. I believe that pages 5-14, which contain the most coherent statement now available on how DI analysts and managers will use information in the late 1980s and early 1990s, will be of particular interest to OC. I ask that you forward it directly to D/OC. The material should be helpful to OC's efforts to design future communications capabilities for the headquarters compound.

5. Finally, I would ask that you designate senior resource/line managers in ODP, OC, and OTE to work with their DI counterparts to develop a coordinated planning schedule for the near-term requirements. We also want to be kept informed on your progress in meeting our longer-term needs. Please call me if you would like to discuss aspects of the Task Force report, or have your representatives contact [redacted] who will act as DI focal point.

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Robert M. Gates

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Attachment:
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REPORT OF THE DI PLANNING AND DEVELOPMENT TASK FORCE

REQUIREMENTS FOR MODERNIZATION

15 MAY 1984

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Report of the DI Planning and Development Task Force

REQUIREMENTS FOR MODERNIZATION

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Scope and Purpose

On 7 February 1984, the Deputy Director for Intelligence and senior Directorate managers were briefed on the report of the DI Modernization Task Force. That report outlined the problems the Directorate confronts today and will confront tomorrow in using information processing technology to manage, analyze and disseminate intelligence. In response to that report the DDI directed that a set of modernization requirements be developed, along with project goals, technical options, budget implications, implementation responsibilities and project milestones.

On 2 April 1984, a Planning and Development Task Force was convened to identify specific substantive requirements. The Task Force interviewed [] members of the Directorate in all Offices and Staffs. While personnel from the Offices of Data Processing, Communications, and Security were consulted on a number of issues, the conclusions presented in this report are solely those of the Task Force.

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SUMMARY

A principal conclusion reached by this Task Force is that the Directorate's analytic capabilities and efficiency can be improved immediately with the application of existing ADP technologies. The Directorate is limited by the lack of full-time access to a computer terminal for roughly two-thirds of its people. Even those who have terminals suffer from training deficiencies, complicated programs, and the inflexibility of their present equipment, which cannot handle analytic tools readily available to corporate analysts.

Another clear message is that the revolution in information processing and collection technologies demands that modernization be a permanent part of the Directorate's mission. The volume of intelligence and other information available to us will increase several-fold by the end of the decade. But at present we lack the flexibility to take advantage of the advances in processing technology which could help us analyze this avalanche of information.

In light of these realities, the Task Force recommends a two-phase approach to modernization:

- o A transitional program during which everyone in the Directorate will be provided with basic ADP services and training in order to give us immediate benefits, improve our product, and acquire the experience we need before we can develop and adopt more sophisticated capabilities.
- o A continuing modernization program that will yield substantially enhanced services, allow us to improve the quality and variety of our products, and ensure that we capitalize on new technology as it becomes available.

The Task Force recommends the Directorate set as its highest priority the achievement of the following transitional goals by March 1985:

- o A Delta Data terminal or personal computer connected to VM and AIM on every desk.
- o A link to SAFE for every analyst and substantive manager.
- o A high-quality printer in every branch.
- o Basic training in VM, AIM, and SAFE.

We believe the transition can be accomplished on time--when SAFE Delivery Two is implemented--if the program begins now.

The goal of the Directorate's continuing modernization program should be to provide a flexible approach to ADP that permits Offices and staffs to meet their needs. To do this, the modernization must include:

- o Rapid and convenient access to external government and commercial databases and the capability to transfer data to Agency computers for further analysis.
- o A flexible communications system to support transmission of digital imagery to analysts' terminals.
- o New techniques to display and disseminate reports in soft-copy and video form.

Actions to implement the transitional program and the longer-term modernization program should begin at once. The Task Force recommends that these tasks be the responsibility of a single manager reporting to the DDI, with consultation to the DDI provided by a Directorate steering group.

Task Force Report**REQUIREMENTS FOR MODERNIZATION**

15 May 1984

The Directorate of Intelligence is in the information business. That business is in the early phase of a technological revolution affecting every aspect of the Directorate's activities and every function performed by its people. We cannot predict the scope and direction of this revolution or precisely how it will affect our business. We do know, however, that:

- o The volume of information from intelligence and other sources will increase several-fold by the end of this decade.
- o The technology to manage and evaluate large quantities of information and rapidly produce high-quality products is advancing dramatically.
- o The Directorate as a whole is behind the state of the art in information processing and will fall farther behind at an accelerating rate unless it modernizes its information-processing systems and trains its people to use these systems.
- o The management of rapid, comprehensive technological change and its implications for our people will become a major challenge for the Directorate.

If the Directorate is to catch up and keep up with revolutionary changes in information technologies, we must ensure that our communications infrastructure, computer systems and training programs provide the capacity and flexibility to adopt state-of-the-art systems to our needs.

Recognizing the Agency's commitment to excellence, the Task Force believes that a modernization program should be established to improve the quality and timeliness of our analytic products. By adopting the best available ADP technology and applications, we will be able to undertake different kinds of analyses incorporating new types of information and handle a broader range of information from traditional sources. We will be able to get our products to consumers faster because we will gather and review more information more rapidly and move products in electronic form through the coordination, production, and dissemination process.

The Directorate has in SAFE and AIM capabilities that could immediately benefit analysts and managers. These systems are available to only about a third of the Directorate, however, because we lack computer terminals and the systems to support them. Personal computers provide a range of analytic and graphics capabilities that could improve the quality and efficiency of our

work, but the lack of flexibility in our present communications system and computer software precludes their widespread use.

Lack of ADP skills and experience is another obstacle to modernization. At present only about [] in the Directorate have a working knowledge of how to use the VM computer system. Only [] know how to produce a graph or build a simple database []. The success of the modernization program will depend on the extent to which the DI can increase this skill base and use ADP capabilities in its day-to-day operations. No matter how user-friendly a program may be or how clear its documentation, nobody can work comfortably or effectively with ADP without first being given the opportunity for extensive, hands-on experience. Only then will analysts and managers begin to use it for what it is--a natural extension of their present capabilities to process and analyze information.

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Recognizing these conditions, the Task Force recommends a two-phase approach to modernization of information processing:

- o A transitional program during which everyone in the Directorate will be provided with basic ADP services and training in order to give us immediate benefits, begin improving our product and acquire the experience we need before we can develop and adopt more sophisticated capabilities.
- o A continuing modernization program that will yield substantially enhanced services, allow us to improve the quality and variety of our products, and ensure that we capitalize on new technology as it becomes available.

Transitional Program

As its highest priority goal, the DI should provide by March 1985:

- o A terminal connected to VM and AIM for every desk.
- o A link to SAFE for every analyst and substantive manager.
- o A fast, high-quality printer for every branch.
- o Basic training in VM, AIM, and SAFE.

Taking into account leadtimes for delivery and installation of equipment, the implementation date for SAFE Delivery Two and Directorate training requirements, the Task Force believes these goals are well within reach by early next year. To achieve our transitional program we would need to add [] new terminals and replace [] old ones in addition to the [] that under present plans would be installed under Project SAFE and by the Offices between now and March 1985. We estimate that procuring and installing these terminals and the printers, necessary computers, and disk storage will require about

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[] above currently programed budgets for fiscal year 1984/85 (see the table). These expenditures are not new funds, but rather those already programed for later years.

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ESTIMATES OF COSTS FOR ACHIEVING TRANSITIONAL PROGRAM

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Terminals. We estimate [] new Delta Datas (SAFE-capable) and [] old Delta Datas (not SAFE-capable) will be in use in the Directorate by March 1985 under present plans. This implies a requirement for [] additional terminals, [] Replacement of all old Delta Datas will bring this requirement to about []

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Printers. [] high-quality laser printers, for branches and divisions or Offices.

Communications. [] connections for terminals and printers.

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Switching Computers. [] COMTEN switching computer devices are required for [] additional terminals plus the printer connections.

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Disk Storage. [] 3380 disk storage devices.

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Training. Training will require additional contractor instructors, VCRs, and monitors in every branch, funding for video instruction manuals, and classroom projectors and terminals.

Additional Central Processor and Support Equipment. If computers and disk storage programed for FY85 are not sufficient to support the additional terminals, it would be necessary to procure in March 1985 equipment programed for early FY86 [] or to ration computer usage.

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TOTAL ESTIMATED COST*

*These estimates are for the transitional program only. We have not tried to estimate costs associated with segments of the longer-term modernization program.

The Task Force believes that personal computers offer a level of analytical, graphic, and computational capability required for our work but not achievable with today's Delta Data terminals. We recognize, nevertheless, that by March 1985 [] Delta Data terminals will be installed in the DI and that these terminals will be of the only model able to access SAFE for some time. We therefore recommend that:

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- o Those who require the unique capabilities of the Delta Data should be provided with that terminal.
- o Remaining requirements for terminals should be satisfied by personal computers that can communicate with VM and AIM. Personal computer(s) should be selected and software written to link these computers to VM and AIM by January 1985. Word processing, graphics, and spreadsheet software should also be provided by that time.
- o ODP should be directed to develop full SAFE access through personal computers by March 1986.

To achieve the benefits of universal access we will need to train [] new users as their terminals are installed. Training current SAFE users in the new capabilities of Delivery Two must continue. Currently, OTE cannot satisfy all these requirements because it lacks sufficient classrooms, equipment, and instructors. The Task Force believes that simply expanding the availability of formal training is insufficient. We need much more emphasis on self-training, mainly at analysts' terminals--not just because of disruptions caused by uprooting branches and shipping them to the Chamber of Commerce building, but also because there is no substitute for hands-on experience in actual work situations.

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The burden for providing on-the-job training rests with the DI Offices and Staffs. The transitional program will be a bootstrap operation in which those who have the ability pitch in and help those who do not. The Task Force recommends several steps that can be taken immediately to help this process along:

- o Designate Office and division ADP officers who have computer skills and can administer a flexible training program that will provide both ADP skills and instruction in how to use these skills in substantive analysis.
- o Develop branch "gurus" who will be given the time to attend special training classes and to provide on-site instruction and assistance to their colleagues. In addition to easing the training burden, this would reduce pressure on the SURE Staff.

Meanwhile, we should start work on other projects that will enhance our self-help capabilities:

- o Introduce interactive, computer-based or video-based tutorials that are easy to use and understand. Contract work on this should begin as soon as possible because of the substantial leadtime required.
- o Improve the clarity and readability of manuals and of the "help" features included in VM and AIM software so they are understandable to non-ADP professionals.

We can improve the adequacy and effectiveness of traditional ADP training if we:

- o Ask OTE to give priority to DI training in classrooms that will become available after CAMS training is completed in the fall; install additional terminals in another classroom in Chamber of Commerce building.
- o Retain use of the classroom in Ames building now slated to return to DDA use.
- o Equip the DI Task Force area (Room 6F39) with terminals and use it for an accelerated SAFE training program.
- o Use rental facilities and contract instructors to train on terminals and on personal computers connected by telephone to the unclassified VM computer.

In addition to improvement in training, we need to give our users more information on computer systems and how they can be used to improve the analytic process. At present, the inadequacy of this information exchange is the cause of a serious adverse impact on our use of ADP capabilities. The Task Force recommends that the DI:

- o Designate a central clearinghouse for information on ADP developments affecting the Directorate. Regular information bulletins, such as the recently reinstituted SAFE newsletter, should be prepared informing Directorate personnel on the status of major ADP projects and available computer services.
- o Organize a series of noontime seminars in the auditorium to introduce specific computer-based analytical tools, such as TELL-A-GRAF and NOMAD.

Modernization Requirements

The Directorate's modernization program should provide a flexible approach to ADP capabilities that will allow Offices and Staffs to gather, process, and apply state-of-the-art technology to meet their needs. Planned capabilities for SAFE will not accomplish this goal. Requirements to upgrade the system should be designed to increase the Directorate's capability to handle large volumes of information and improve the quality of its products and efficiency of its operation.

The Task Force identified improvements which information processing technologies can provide in virtually every area of Directorate activity: collection requirements management, database support, video data support, crisis and time-sensitive support, production support, and dissemination and presentation support.* While all the objectives outlined in each of these six areas should be incorporated into a modernization program, the Task Force believes improved access to open-source and classified databases, the conversion of hard-copy data to electronic form, and new techniques for disseminating DI products to consumers are of highest priority.

Collection Requirements Management

The Task Force found that analysts believe they must exert an unacceptable amount of time and effort to work through the formal tasking process. We found that they do not have information readily available to determine the priority of their requirements, whether they are being acted upon, the reasons for rejection, and the status of collection against accepted requirements. The lack of ready feedback has led to a fatalistic view that nothing can be done to improve the responsiveness of the collection requirements process. It has discouraged analysts from learning the capabilities of collection systems and from using the collection requirements process on other than an ad hoc basis. This situation could deteriorate as the number and complexity of overhead collectors increase. The Task Force believes that actions can be taken now to improve collection management and to prepare for the advent of new collection systems. Among these are:

- o Provide direct access through analysts' terminals to a database of collection requirements. The database should support substantive queries, provide feedback on requirements, and flag upcoming collection opportunities.
- o Develop analytic methods and associated collection strategies to take advantage of present and future collection systems, environmental conditions, and operational scenarios.

Database Support

A key to higher quality analysis is ready access to data in usable form. The more efficiently we can access and process data, the more time we can dedicate to its analysis. With the potential to store and process large amounts of information with advanced

*Recommendations outlined in each of these areas are intended to specify the dimensions of a Directorate-level modernization program. In putting together this program, however, the Task Force encountered a number of valuable ideas relevant to particular Offices and Staffs. These are described in Office overviews and are summarized in a Checklist of ADP Applications in the Annex to this report.

ADP technologies, a DI modernization program should place a premium on developing systems that (1) provide direct access to existing government and commercial computerized databases, (2) capture in electronic form as much information as possible, (3) support the development of Directorate databases, and (4) store, search, and process large volumes of information using fast processing and state-of-the-art query techniques.

(1) Data Access

Millions of dollars are being spent by commercial organizations and by the US and other governments on the indexing and abstracting of all kinds of information into computer databases. We must ensure that the results of these massive efforts are available to our analysts in an easily usable form. There are some 2,000 commercially available databases in the US, over 450 in Western Europe, and several dozen in Japan, many of which contain information on economic, political, scientific, and technical developments. While the intelligence analysts are generally aware of the value of this information, most are not trained to use it and are unaware of which databases are relevant to their work.

Similar problems exist with respect to classified databases. [redacted] all maintain databases that are of potential interest to the DI but are not available by computer link. For those databases that we can link to, access points are far from analysts' desks, queries are cumbersome or time-consuming, and data retrieved from external databases cannot be readily transferred to Agency computers for further analysis. Within the Directorate, access to several large computerized databases is inhibited because they must be stored off-site to conserve space.

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The Task Force recommends that the following actions be taken to improve the quality of analysis:

- o Create a cadre of database search specialists with knowledge of the range of databases of interest to the DI and make these specialists available in the Offices. These specialists could advise analysts of databases pertinent to their region or specialty and help them query and retrieve information. Moreover, they could seek out new databases worldwide and implement procedures for accessing them.
- o Establish a system to periodically query external databases in much the same way a SAFE profile selects cables for dissemination. Results of these queries should be made available to analysts via their terminals.
- o Establish systems to permit direct queries of external commercial and government databases, domestic and foreign, from analysts' terminals. Provide capabilities to transfer the results of queries to local storage or the central VM system through the same terminal.

- o Create a set of analyst aids to facilitate the use of databases, such as a substantive index, query instructions, and standard query protocols.
- o For compartmented data, provide in the appropriate Offices stand-alone computer systems or remote terminals capable of fast text search.
- o Establish a system to rapidly search and retrieve the large amounts of information on magnetic tape now held off-site.
- o Define policies on sharing data with other agencies. Establish interagency agreements on security, interfaces, and query protocols.

(2) Data Input of Hard-copy Material

Despite the advances brought about by SAFE, about half the volume of information received by the Directorate still is on paper. If this information were converted to electronic form, it could be handled in much the same way as SAFE cables: disseminated to analysts on the basis of profiles, stored centrally, and analyzed with various electronic tools. The Task Force recommends that:

- o The text of CIA and NIC publications, such as Intelligence Assessments, Office periodicals, NIEs, and typescripts, be maintained in an online SAFE file for text search and retrieval. Doing this will allow faster dissemination and automated indexing, storage, retrieval, and routing. Eventually, finished Agency publications should be provided electronically to all Community agencies.
- o The Directorate request the Intelligence Information Handling Committee to require collector reporting to be provided in electronic form wherever possible.
- o Programs be established to develop systems for inputting, storing, searching, and displaying on analysts' terminals combined text and image data from all hard-copy documents received by the Directorate. This program should encompass several different approaches, including image scanning and storage for material not in any standard font [redacted] high-speed, intelligent optical character readers for scanning standard-font documents; and low-cost optical character readers that can be used to efficiently select keywords and phrases for indexing.

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(3) Database Development

The use of personal databases will expand rapidly as more analysts gain experience with computer terminals. OSWR already has over 100 online computerized databases. As the need for database development increases within the Offices, additional

skills will be required to build and maintain them. This process could be made more efficient and databases could become more widely accessible if they were constructed in standard languages and if their existence was officially recorded. For these reasons, the Task Force recommends that:

- o Offices be encouraged to expand intelligence assistant and programmer support to serve their growing database development needs.
- o The DI maintain standards for query languages, database management, access control, documentation, and formatting.
- o A description of the contents of new databases be posted in a central index accessible to every analyst.

(4) Database Processing

Artificial intelligence (AI) offers us the opportunity to electronically route, index, store, search, and analyze most of the information coming into the DI. OGI is beginning to apply AI techniques to preprocess information [redacted]

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[redacted] for political analysis. OSWR and SOVA are applying these techniques in an experimental study [redacted]

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[redacted] This seems to us the best way to cope with the increased inflow of intelligence as well as to provide the tools necessary to advance the quality and sophistication of our analytic products. We are confident of our ability to make use of this technology provided we are successful in converting most of the material we receive into electronic form. In addition, we must ensure that major Directorate databases not yet built meet standards in format and indexing that permit the use of artificial intelligence query techniques and provide accessibility to as wide an audience as possible. We therefore recommend that the Directorate:

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- o Support the development of fast query systems that can process very large files in minutes.
- o Have major databases indexed in a way that takes into account the potential applications of artificial intelligence query techniques against the files.
- o Establish a mechanism to regularly convey information on state-of-the-art database query and processing techniques to analysts, such as through briefings and seminars.

Video Database Support

[redacted] are becoming increasingly important for intelligence analysis. Television broadcasts of political and government proceedings convey a feel of policy pressures, attitudes, and concerns that cannot be captured in print. The

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value of this information has been diminished, however, by the difficulty of identifying programs of interest, obtaining tapes in a timely manner, and developing a database of video information of intelligence value. With the exception of crisis periods, analysts must wait up to six months to see a particular broadcast. Group screenings make it difficult to review key segments and leave viewers "nothing to take back to their desks except a memory." To use this information effectively, analysts require the following:

- o A collection requirements management system that provides an online index of scheduled broadcasts and a mechanism to quickly advise collectors of broadcasts that should be made available live or recorded.
- o Real-time acquisition and transmission of video material for viewing at Headquarters.
- o The ability to screen television broadcasts in the branch and to tape, index, review, and store them for later reference.

Crisis and Time-Sensitive Support

While the functional needs of DI analysts who perform crisis and time-sensitive support do not differ markedly from those who perform long-term research, these types of support demand much greater speed and responsiveness in obtaining data and disseminating reports. Until now, the need to convene a task force in a central location has been balanced against the desire to keep analysts close to their files. Once SAFE is implemented and extensive electronic filing systems have been developed, calling analysts away from their desks will impose fewer drawbacks, so we anticipate increased use of interdisciplinary groups and task forces. This change will mean a greater need for uninterrupted, round-the-clock operation of portions of SAFE. Beyond that, crisis support will require:

- o A system that can store, search, and retrieve finished intelligence reports, including photographs, maps, and other graphics.
- o Terminals with windowing or split-screen features and capabilities for calling up and displaying topographical maps in color, isometric (three-dimensional) projections, and digital imagery.
- o Electronic assistance for the joint coordination of drafts.
- o The capability to transmit maps and pictures in electronic disseminations of sitreps and to produce and disseminate TV-news-type sitreps via secure television circuits.

Time-sensitive intelligence support for international conferences and negotiations would be enhanced by the capacity to draw on information and analysis from Headquarters in real time.

The technology required to transmit information from the Directorate to consumers is available now, and the Task Force recommends we take advantage of this opportunity to develop:

- o Direct, interactive data transmission communications [redacted]
[redacted] 25X1
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- o Up-to-date and reliable telephone, cable, and computer links [redacted] with other intelligence agencies and with key consumers. 25X1
- o In the long term, the capability to transmit images as well as text [redacted] 25X1

Production Support

The use of ADP for drafting and coordination has in the past been limited to word processing. Even in this limited context, text is often rekeyed to conform to the word processors in the production offices. ADP is almost never used to coordinate or review drafts, in part because of the lack of widespread computerization and in part because of the technological limitations of the Delta Data terminal.

Some of the improvements recommended by the Task Force in this area can be implemented once the transitional program has been completed. Others will not be available until a long-term modernization program has been implemented:

- o In the near term, we should adopt a single word processing standard that is both easy to use (for example, taking advantage of function keys or a mouse) and compatible with our publication and page-composing process.
- o Develop an easy-to-learn graphics capability that can be integrated with text, displayed at analysts' terminals, and reproduced in color and in isometric projection.
- o Procure terminals that provide multiple window capability so an analyst can see source documents while drafting, coordinating officers can compare suggested draft changes from different reviewers before one version is inserted into the text, and charts and text can be observed simultaneously by reviewers.
- o Establish electronic communication and computer links with other Intelligence Community members to allow, for example, transmission of electronic mail and coordination of finished drafts and current intelligence.

Dissemination and Presentation

An integrated information dissemination system linking intelligence producers and consumers will give the Directorate the

capacity to provide near-real-time intelligence support incorporating text, graphics, imagery, and video. Longer-term research and analytical products could be conveyed quickly and incorporate multimedia components that consumers could review at their convenience. The ability to provide improved current support is dependent, however, on the adoption of several proposals in this report as well as on developing the production skills required to move from a text-based analytical product to a multimedia product.

The Task Force recommends the following measures to accomplish these modernization goals:

- o Establish direct interactive links with the White House and other principal consumers to transmit text, graphics, imagery, and video.
- o Invest in facilities, equipment, technical assistance, and analysts' training required to produce multimedia analytic products.
- o Develop a program to familiarize analysts with the video production process.

Management Support

A range of electronic aids coupled with a computer-based communications system could simplify the process of obtaining management and administrative information, controlling documents, approving training and travel requests, processing time and attendance cards, and carrying out the multitude of other duties now handled via paper. The Task Force therefore recommends that:

- o All Staffs and Office divisions be equipped with low-cost optical character readers that can read Office correspondence and transfer this information to local storage or VM.
- o The application process be supported by a Directorate tracking system for folders and resumes.
- o Offices and Staffs justify the continued use of paper forms.
- o Handbooks and regulations, vacancy notices, training and travel requests, etc., be converted to electronic form and disseminated online.
- o An "electronic signature" that will be accepted as legally valid be developed. While this is a long-term goal, AIM notes can be used in the interim to authorize routine training, travel, and cable clearance requests.

Technical Implications

The modernization requirements outlined by the Task Force imply major programs to expand the capabilities of central and

desk-top computers for storing, processing, analyzing, and displaying information and to upgrade the capacity of Agency communications. In addition, creative solutions will be required to solve the security issues which these programs will inevitably raise.

Terminal. The analyst's terminal of the late 1980s should possess a multiple window capability that can display both text and images in combination through the use of function keys, a mouse, or other advanced control features. The terminal should have access to local storage and a flexible communications capability to transfer data to and from the central computer and, with proper security safeguards, to transfer data between its local storage and external Agency-controlled systems. In addition, it should have the capability to query and receive data from commercially available databases and to transfer the data to local or central storage. It should be matched with a fast, high-quality local printer.

ADP Processing. The Directorate's ADP systems should accommodate a variety of personal computer terminals; they should also allow information to be stored at the terminal and in the central computer. Substantial processing will be done at both locations. Special processors to search and manipulate large text files in a real-time, interactive mode will be required. Other fast processors may be required to scan and input hard-copy text.

Communications. A flexible, high-capacity communications system is fundamental to the success of nearly every aspect of the long-term modernization program. We cannot know all the demands that will be placed on this system over the next two decades, but we do know that we must plan for potentially explosive growth in both capacity and circuits. The Directorate will require, for example, the display of both image and text at analysts' terminals and the transfer of large amounts of data between the central computer and local storage. Terminals should be able to exchange information with other government agencies. [redacted]

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[redacted] Further, the system should support direct analyst queries of classified government databases and of commercial databases [redacted]

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[redacted] and it should provide for transfer of data from these sources to analysts' terminals. Links will also be needed to receive and send digital imagery and to display video in branches.

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Security. The Directorate will need to work closely with the Office of Security to establish programs that will allow these capabilities to be exploited within a secure operating environment. Hardware, software, and procedures must be designed to safeguard:

- o Access to internal and external databases from the same terminal.
- o Query patterns to external databases.

- o The internal, high-capacity communications network from intrusion.
- o Links to policymakers for display of finished products.
- o Data on storage media at analysts' terminals.
- o Data-sharing among intelligence agencies, once a policy has been established on this issue.
- o Point-to-point access to special, sensitive databases.

Human Factors and Implications

The Task Force recognizes the human implications of its recommendations. We are proposing significant changes in the daily working lives of [] people in a complex organization. We believe the change will be positive, professionally and personally, but we recognize that change can be threatening and painful. As much emphasis should be placed on the management of change as on selection of ADP equipment.

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Our office environment should be as advanced as our ADP systems. Equipment should be designed to meet the professional and personal needs of our people. Space will continue to be at a premium, and no more than one terminal should be necessary to support individual needs. Leadtimes to change terminals or modify capabilities should be reduced from months to hours. Local printers should be fast, reliable, and quiet.

The Next Steps

Actions to implement the transitional program should begin at once because of the leadtimes involved and the complexity of the tasks. The Task Force recommends that these tasks be made the responsibility of a single manager reporting to the DDI, with consultation to the DDI provided by a Directorate steering group. Responsibilities would include:

- o Establishment and coordination of the activities of an inter-Directorate working group to carry out the goal of installing a terminal on every desk by March 1985.
- o Establishment and coordination of an inter-Directorate working group to develop and implement a training program to meet the goals of the transitional program.
- o Establishment and coordination of an inter-Directorate working group to recommend by 15 June personal computer(s) and software to be adopted and to ensure that links to VM and AIM are created by January 1985.

The Task Force believes that a small, permanent DI staff will be necessary to implement the long-term modernization program. This staff should be led by the manager selected to implement the transitional program. To assure that no time is lost, we recommend that the following actions be taken at once:

- o Initiate system definition and integration studies.
- o Establish permanent relationships with DDA and DDS&T components.
- o Forward this report to the DDA and DDS&T for information and preliminary guidance.
- o Task the manager to report back recommendations for technical options and their cost implications in time for the fiscal year 1987 budget planning conference.

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